

PRESERVE **your POSTS** **with PENTA**

By
C. S. WALTERS



← **Treated**

↓ **Untreated**



Circular 636

**University of Illinois
College of Agriculture
Extension Service in
Agriculture and
Home Economics**

Why Use Penta

PENTACHLORPHENOL (pronounced "penta-klor-fee-nol," but let's shorten it to *penta*) is a relatively new chemical wood preserver. It has been found to lengthen the life of some nondurable and often little-used species of wood, making them valuable for use as fence posts. Penta is a "clean treatment," and is simple and inexpensive to use on the farm.

Penta is being tested by the Department of Forestry, University of Illinois Agricultural Experiment Station. Only the cold-soak method has been used in the tests; heating the preservative is not generally recommended for farm operations. Since the tests have not yet been completed, results are not final. The instructions on the following pages are based on results to date. They are given as a guide for those who are interested in penta for farm use.

The Post Supply

ILLINOIS FARMERS use about 20 million wooden fence posts each year. Most of these posts are cut from farm woodlands within the state.

By wise use of farm woodland, most farmers can grow all the posts they need every year. Hedge (osage orange), black locust, cedar, and other naturally durable woods are getting scarce, but nondurable woods treated with penta are good substitutes.

Conserve your timber by cutting it carefully. Take out the culls and "cripples" first, and thin sapling or pole stands lightly. Salvage posts from tops of trees cut for sawlogs and from fencerows, thickets, and pasture-improvement projects. The tops of sound dead trees make satisfactory posts. Avoid trees showing signs of decay. Cut only *round* posts for treatment.



The owner of this native farm woodland is thinning it lightly and will make fence posts out of the trees that have been cut down. The posts will be treated before they are used.



This fine plantation of white pine is the result of planting a waste area. By thinning the plantation each year, the owner gets several hundred posts which he treats and either uses or sells.

Select Your Posts for "Treatability"

There are three things to remember when choosing wood to be treated and used for posts:

- Sapwood of most trees is more easily treated than heartwood, but heartwood usually resists decay better. (The sapwood is the light-colored wood just under the bark, while the heartwood, often darker in color, is located in the center of the post.)

- Wood from some kinds of trees is easier to treat than wood from other kinds.

- Some woods do not have to be treated at all in order to last a long time.

The list below tells what woods need treatment and also how successfully they will take penta treatment. Only the

heartwood has been considered in classifying the woods as to their lasting qualities, since it is usually more durable than the sapwood.

The letters following each species show what results have been obtained with penta:

G = Good results — select this kind for treatment.

F = Fair results — use if species testing "good" cannot be found.

P = Poor results — use only as last resort.

? = Not yet tested.

Two letters after a species indicate a range in the results obtained.

VERY DURABLE

Do not need treating

Hedge (osage orange)

Locust, black

DURABLE

*Treat small round posts — do not treat
split or large round posts*

CatalpaF-P Oak, burF-P

Cedar, red ? Oak, postF-P

Locust, honey .. ? Oak, whiteF-P

Mulberry ?

MODERATELY DURABLE

Improved by treatment

Butternut ?

Cherry, blackG-F

Cedar, white ?

Elm, red F

Sassafras ?

NOT DURABLE

Use only if treated

Ash P Ironwood ... ?

AspenF-P Maples P

Basswood P Oak, black.. G

Birch F Oak, pin.... G

Buckeye ? Oak, red.... G

Elm, American ... F Pines..... G

Gum, sweet (red) G Poplar..... ?

Gum, tupelo G Sycamore... G

Hackberry F WillowF-P

Hickories.....G-F

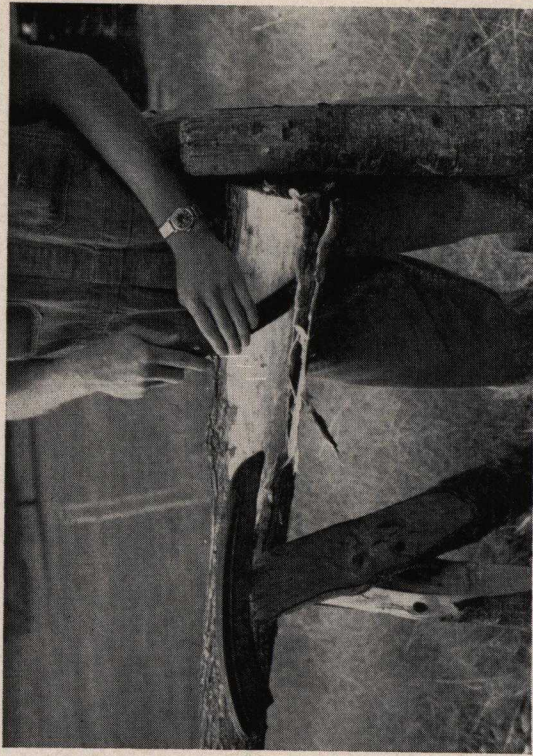
If you treat a nondurable wood which takes treatment easily (such as sycamore or pine) you will probably have a more serviceable post than if you use a naturally durable wood (such as white oak) without treatment.

Posts Must Be Prepared Right

Only round posts which have been peeled and dried should be used for penta treatment. If bark (either inner or outer) is left on the post, it slows the drying and keeps the penta from penetrating the post. Peel your posts clean before seasoning them.

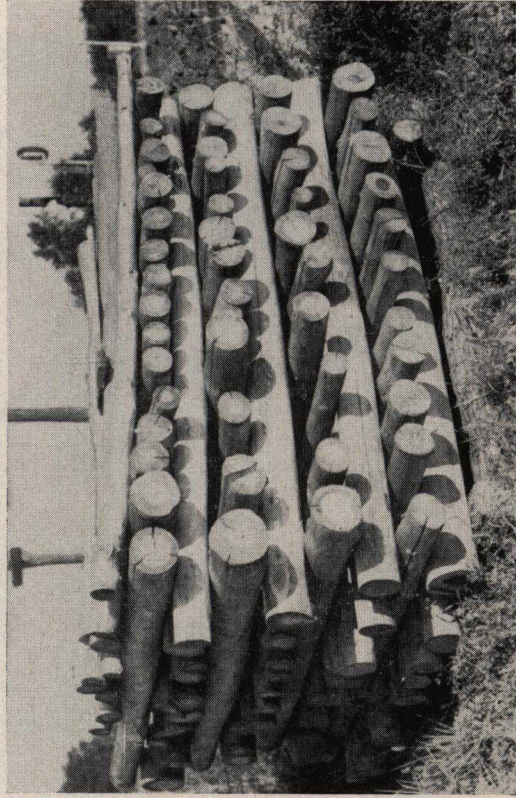
It is best to trim knots and branch stubs closely before treating the posts. Cutting, boring, or notching a post after it has been treated will expose untreated wood to decay. If you find it is not practical to cut, notch, or bore a post before treating it, brush-treat the exposed wood liberally with penta.

Altho posts may be cut any time of the year, the bark peels most easily if they are cut when the "sap is up," or about two weeks after the broad-leaved trees leaf out. A good schedule is to cut the posts in early spring, season them thru the summer, and treat in late summer or early fall.



A peeling buck holds the post while the bark is removed with a spud made from an automobile spring leaf.

Stack Posts Loosely Off the Ground to Dry



Within limits, the less moisture in the post, the better the treatment and the longer it will last.

In Illinois and neighboring states, posts should season in two to three months provided (1) the seasoning period includes June, July, or August, and (2) the posts are well peeled and properly stacked at least 1 foot above the ground in a well-ventilated location.

The bottom layers of these cottonwood, willow, sycamore, and river birch posts have been open-piled and the two top layers close-piled to let the posts season thoroughly. The second post in the fourth layer down dried too quickly, causing the butt end to split.

Direct Sunlight May Cause Undesirable Checking



Seasoning posts too rapidly or stacking freshly peeled posts in direct sunlight may cause undesirable checking and splitting. This is because the outside of the posts dries and shrinks faster than the inside, resulting in checks (small cracks) and splits.

Stacking the top posts close together or roofing the stack with old boards the first month will help to prevent undesirable splitting.

Because of excessive checking and splitting, these hackberry and hickory posts are much less desirable for treatment with penta than those shown on page 7.

Mix Penta Concentrate With a Light Oil



Penta comes in three forms: crystals (left), liquid concentrate (center), and ready-to-use (right). The liquid concentrate is best for use on the farm.

Use a light fuel oil (No. 1, 2, or 3) or kerosene to dilute the penta liquid concentrate (*follow the manufacturer's directions on the container*). After it has been diluted, the solution should contain 5 percent of penta. Some companies sell a ready-to-use solution, but it is probably cheaper to mix the oil and concentrate at the place where the posts are to be treated. Also on the market is a special concentrate to be diluted with kerosene or Stoddard's Solvent (a very light oil) for treating posts that are to be painted. Ordinarily, penta does not bleed thru the paint, but the use of a good priming coat of paint is recommended.

For sources from which to obtain penta, write *Forestry Department, University of Illinois, Urbana*.

CAUTION: Some people find penta irritating to the skin. If it irritates your skin, protect your hands and arms with synthetic rubber gloves or wash them frequently with soap and water. Keep tank covered to protect children and livestock. Use the same fire precautions that you would around kerosene or tractor oil.

Use Easiest Method

When you are treating posts, it is best to keep them upright, butts downward. Tanks should be deep enough to let the posts be completely covered with penta solution. Shallow tanks mean more work, since the posts must be turned end-for-end for complete treatment. (A single 55-gallon drum is too shallow to treat even one half of a 7-foot post.)

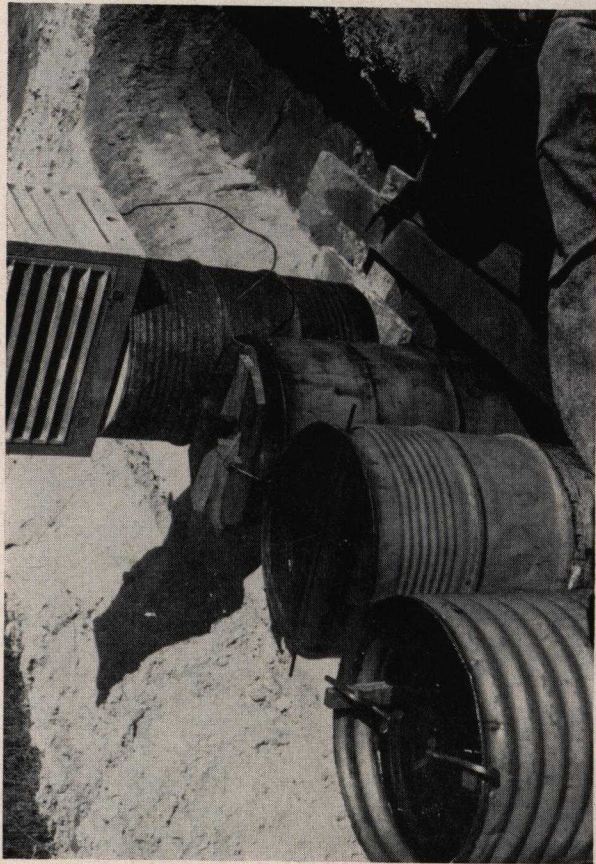
Getting posts into and out of a treating tank will be easiest if the tank is sunk below ground level with the top about knee high above ground. Put the posts in the tank, fill it as full of preservative as possible, and see that the liquid is kept at the level for at least 48 hours. Within limits, the longer the soaking the better the solution penetrates the wood and the longer the life of the post. It is doubtful, however, whether posts will absorb much liquid after 72 hours.

Let treated posts drain a day or so, or until they are dry enough to handle. If they are to be painted, they should dry for two to six months before paint is applied.

The Treating Plant

A good tank which will hold 40 to 50 line posts at one time can be made quickly and cheaply from a gasoline storage drum of at least 500-gallon capacity (3 x 8 feet). A wholesale distributor of oil products may be able to sell you a used tank that is still oil-tight and serviceable. The cost will probably be less than \$50.

Some other types of treating plants are pictured on the next three pages. Both good and bad features of treating equipment are illustrated. All the plants have done the job, but those pictured on pages 11 and 12 have been more satisfactory than those shown on page 13.

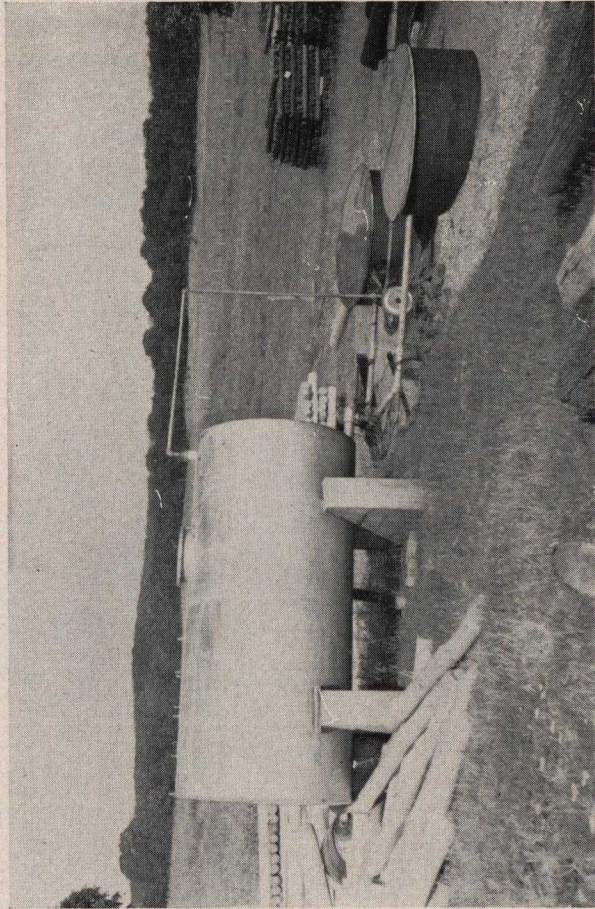


A SIMPLE PLANT. The tank on the left was made from an 8-foot section of steel culvert. The other two were made from 55-gallon oil drums, 2 $\frac{2}{3}$ drums being used for each tank.

Tanks made from oil drums hold 15 to 20 posts at one time. Total cost of one of these tanks is about \$25, including both labor and materials. The drums cost about \$3 each, and it costs about \$2 to weld each joint after the drums have been prepared for welding. Acetylene welding was found to be better than electric. Drums of the same size and design should be used so that they can be put together easily.

Note the three methods of holding posts down in the tank. The one pictured in the center is best. A board lid is put on top of the posts, and a 2-by-4 is placed across the lid. These boards are held down by a half-inch steel bar which is run thru holes in the tank.

The above-ground part of these tanks was painted with metallic zinc. (Aluminum paint can be used also.) The below-ground portion was given a coat of asphalt roofing paint.

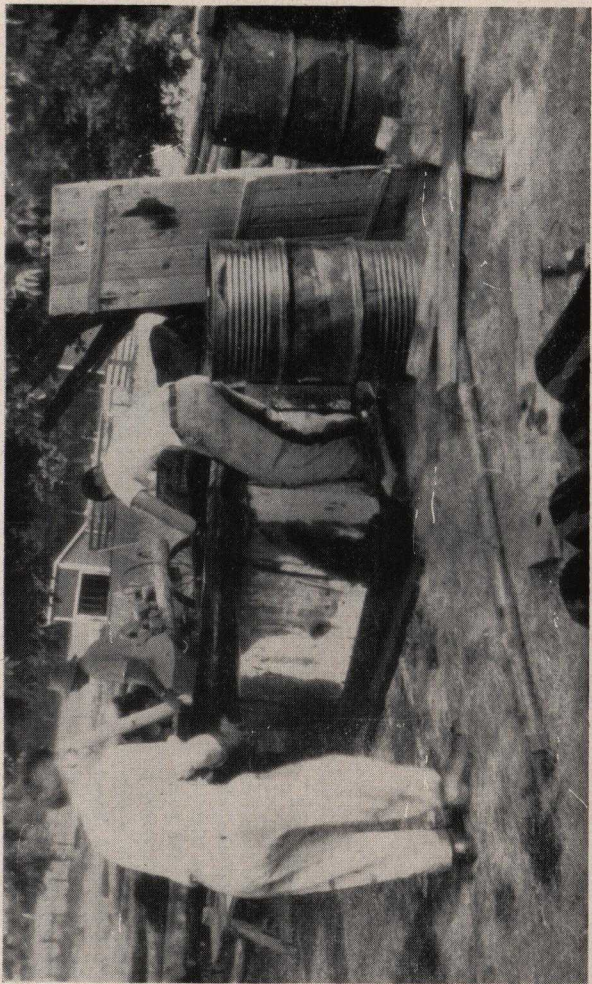
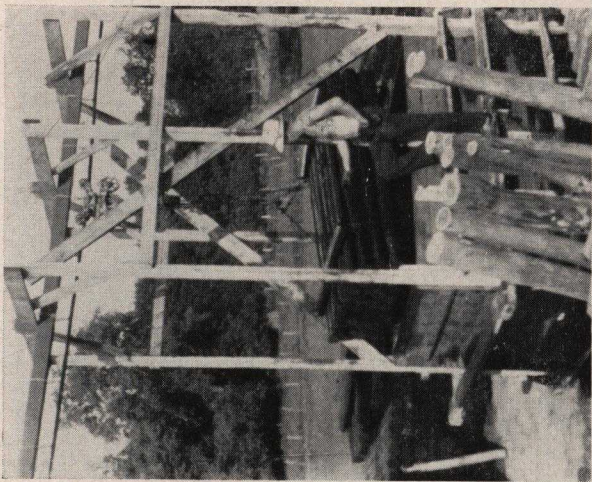


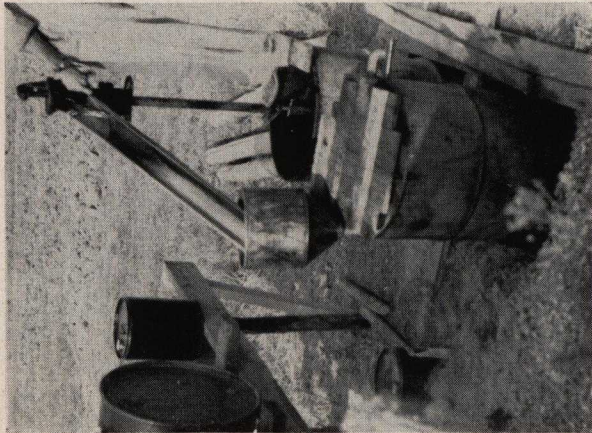
LEFT: A very satisfactory plant for large operations. This plant cost over \$600, but the possible output of 150 posts every 48 hours probably justifies the cost. The owner treats 2,000 to 3,000 posts a year, selling those not needed on the farm.

The two treating tanks, which are constructed of sheet steel, are 55 inches in diameter and 8 feet deep. Each tank holds 60 to 80 posts. Penta flows from the storage tank to the treating tanks by gravity. The pump that returns the penta to storage is run by a 1.5-horsepower gasoline engine.

LOWER LEFT: The owner of this wooden tank had a hard time keeping it oil-right. Working on the platform was not satisfactory.

LOWER RIGHT: Posts can be treated by cold-soaking them in a horizontal position, but **UPRIGHT TREATMENT IS FAVORED.** This tank is 2½ x 4 x 8 feet and holds about 40 posts.





An old pitcher pump and a length of gutter are being used to transfer the penta from tank to tank. The gutter can also be used to fill the treating tanks from storage. The pump clamp was made by welding a piece of angle iron to a cabinetmaker's C-clamp. A barrel pump is just as satisfactory but usually costs more than a pitcher pump.

How Much Does Treating Cost?

The cost of treating posts with penta can only be estimated, since size of posts and cost of oil and penta vary from place to place. Here are some figures showing the probable range in cost:

Post on stump (stumpage).....	5 to 10 cents
Cutting and hauling to plant.....	5 to 10 cents
Peeling.....	5 to 10 cents
Cost of 5-percent penta solution.....	10 to 25 cents
Labor of handling at plant.....	2 to 5 cents
Depreciation of treating equipment.....	1 to 1 cent
Total.....	28 to 61 cents

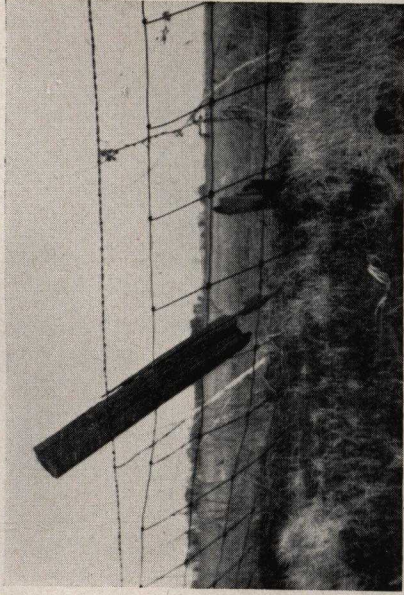
Thus the average treated post will cost about 45 cents, of which about half is for labor. If a post of similar size and quality costs 75 cents when purchased locally, you will save 30 cents on each post that you cut from your woodland and treat at home.

How Long Will Treated Posts Last?

Posts cold-soaked with penta are expected to last 15 years or more, depending on how well the treating job is done and what kind of wood is used. It is not possible to make a more definite statement until service tests have been underway for a longer time.

The two posts shown on the front cover are black oak. They have been in the ground in northern Illinois about six years. The untreated one (*bottom*) has rotted badly and will serve only a short time longer. The treated one (*top*) shows no sign of decay and will serve many more years.

No posts, whether treated or untreated, will last, however, where fence-rows are burned. Advantages gained by treating the posts will be completely lost.



This post has failed to give full service because the farmer burned his fencerow.

POST-TREATING PAYS

Plan now to treat next year's posts.

Woodlands, fencerows, and tree plantations are good sources for posts. A light thinning of the woods or plantation improves the growth of the remaining trees and provides a supply of good posts.

Use only round posts that have been peeled clean and are well seasoned.

To season posts, stack them in a well-ventilated place at least a foot off the ground.

Treat posts in upright position, butts down. Soak posts at least 48 hours in a 5-percent solution of penta. Prepare the solution by diluting a liquid concentrate with a light fuel oil or kerosene.

Cooperative Extension Work in Agriculture and Home
Economics: University of Illinois, College of
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H. P. RUSK, *Director*.

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Urbana, Illinois, February, 1949

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